1. (Currently Amended) A cardiopulmonary bypass catheter system for arresting a patient's heart and maintaining arterial circulation comprising:

a return cannula having an elongated cannula body, a distal end adapted for positioning in a blood vessel, a proximal end, a return lumen in the cannula body adapted for flowing blood therethrough, a return outlet at the distal end in communication with the return lumen, a return inlet at the proximal end in communication with the return lumen, a catheter port at the proximal end in communication with the return lumen and adapted to removably receive a catheter therein, and a hemostasis valve in the catheter port adapted to seal around a catheter positioned in the catheter port; and

an occlusion catheter slidably positioned through the catheter port and the return lumen, the occlusion catheter having an infusion lumen with an infusion inlet and an infusion outlet, the infusion inlet being adapted for connection to a source of cardioplegic fluid, and an expandable occlusion member attached to the occlusion catheter at a location proximal to the infusion outlet having a collapsed configuration adapted for introduction through the return lumen and an expanded configuration adapted for occlusion of the ascending aorta between the coronary ostia and the brachiocephalic artery;

wherein the return lumen is adapted to deliver blood when the occlusion catheter is positioned therein at a flow rate sufficient to maintain arterial circulation when ~~with~~ the heart is arrested.

2. (Original) The cardiopulmonary bypass catheter system of claim 1 further comprising a venting port in communication with the infusion lumen, the venting port being adapted for connection to a pump for withdrawing fluids from the ascending aorta through the infusion lumen.

3. (Original) The cardiopulmonary bypass catheter system of claim 1 wherein the return lumen is adapted to deliver blood at a flow rate of at least about 4 l/min and a pressure of less than about 250 mm Hg.

4. (Original) The cardiopulmonary bypass catheter system of claim 1 wherein the return lumen has an inner diameter of about 5-9 mm.

5. (Original) The cardiopulmonary bypass catheter system of claim 4 wherein the occlusion catheter has an outer diameter of about 2-5 mm.

6. (Original) The cardiopulmonary bypass catheter system of claim 1 further comprising a source of cardioplegic fluid coupled to the infusion port.

7. (Original) The cardiopulmonary bypass catheter system of claim 1 further comprising a source of oxygenated blood coupled to the infusion port.

8. (Original) The cardiopulmonary bypass catheter system of claim 1 further comprising a pump coupled to the return inlet adapted for pumping oxygenated blood through the return lumen.

9. (Original) The cardiopulmonary bypass catheter system of claim 8 wherein the pump is adapted to pump oxygenated blood through the return lumen at a rate of at least about 4 l/min. at a pressure of less than about 250 mm Hg with the occlusion catheter positioned in the return lumen.

10. (Original) The cardiopulmonary bypass catheter system of claim 1 wherein the infusion lumen is configured to deliver cardioplegic fluid at a rate of at least 250 ml/min at a pressure of less than about 300 mm Hg.

11. (Original) The cardiopulmonary bypass catheter system of claim 10 wherein the infusion lumen has a cross-sectional area of at least about 4.5 mm^2.

12. (Original) The cardiopulmonary bypass catheter system of claim 1 further comprising a venous cannula positionable in a vein and an oxygenator fluidly coupled to the venous cannula, the oxygenator being fluidly coupled to the return inlet.

13. (Original) The cardiopulmonary bypass catheter system of claim 1 wherein the return cannula is positionable in a femoral artery and the occlusion catheter has a length of at least about 80 cm such that the occlusion member is positionable in the ascending aorta.

14. (Original) The cardiopulmonary bypass catheter system of claim 1 wherein the occlusion catheter has a pre-shaped distal portion configured to conform to at least a portion of the aortic arch.

15. (Original) The cardiopulmonary bypass catheter system of claim 1 wherein the occlusion catheter has a pressure lumen with a pressure outlet distal to the occlusion member and a pressure port proximal to the occlusion member adapted for connection to a pressure monitoring device.

16. (Previously Amended) A cardiopulmonary bypass catheter system for arresting a patient's heart and maintaining arterial circulation comprising:

a return cannula having an elongated cannula body, a distal end adapted for positioning in a blood vessel, a proximal end, a return lumen in the cannula body adapted for flowing blood therethrough, a return outlet at the distal end in communication with the return lumen, a return inlet at the proximal end in communication with the return lumen, a catheter port at the proximal end in communication with the return lumen and adapted to removably receive a catheter therein, and a hemostasis valve in the catheter port adapted to seal around a catheter positioned in the catheter port;

an occlusion catheter slidably positioned through the catheter port and the return lumen, the occlusion catheter having an infusion lumen with an infusion inlet and an infusion outlet, a venting port in communication with the infusion lumen, and an expandable occlusion member attached to the occlusion catheter at a location proximal to the infusion

outlet having a collapsed configuration adapted for introduction through the return lumen and an expanded configuration adapted for occlusion of the ascending aorta between the coronary ostia and the brachiocephalic artery;

a return pump coupled to the return inlet and adapted for pumping oxygenated blood through the return lumen with the occlusion catheter positioned therein at a flow rate sufficient to maintain arterial circulation with the heart arrested;

a source of cardioplegic fluid coupled to the infusion port; and

a venting pump coupled to the venting port for withdrawing fluids from the ascending aorta through the infusion lumen.

17. (Previously Added) A cardiopulmonary bypass catheter system, comprising:

a cannula having a lumen adapted for flowing blood therethrough; and

an occlusion catheter sized and configured to be slidably positioned through the lumen, the occlusion catheter having an occlusion member, the occlusion member having a collapsed configuration adapted for introduction through the return lumen and an expanded configuration adapted for occlusion of the ascending aorta between the coronary ostia and the brachiocephalic artery.

18. (Previously Added) The cardiopulmonary bypass catheter system of claim 17, comprising:

a catheter port at the proximal end of the return cannula in communication with the return lumen and adapted to removably receive the occlusion catheter therein, and a hemostasis valve in the catheter port adapted to seal around the occlusion catheter when the occlusion catheter is positioned in the catheter port.

19. (Previously Added) The cardiopulmonary bypass catheter system of claim 17, wherein the occlusion catheter has an infusion lumen having an infusion outlet located distal to the occlusion member.

20. (Newly Added) The cardiopulmonary bypass catheter system of claim 17, wherein the return lumen has an inner diameter of about 5-9 mm.

21. (Newly Added) The cardiopulmonary bypass catheter system of claim 17, wherein the return lumen is configured to deliver blood when the occlusion catheter is positioned therein at a flow rate sufficient to maintain arterial circulation with the heart arrested to a bypass system.

22. (Newly Added) The cardiopulmonary bypass catheter system of claim 17, wherein the occlusion catheter is sized such that the occlusion member is located within the ascending aorta between the coronary ostia and the brachiocephalic artery, when the cannula is introduced into an artery peripheral to the aorta.

23. (Newly Added) The cardiopulmonary bypass catheter system of claim 17, wherein the occlusion member is configured to occlude the aorta when the occlusion member is in the expanded configuration.